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ABSTRACT

An innovative approach to teaching learning theory to undergraduates was tested by comparing a modified Personalized System of Instruction (PSI) group process class (n=19) to a traditional teacher-centered control class (n=32). Predictions were that academic performance and motivation would be improved by the PSI method, and student satisfaction would increase as a result of attention to group process. Academic performance and motivation increased as predicted, but students' ratings of satisfaction with the instructor were lowered. Limitations of the study regarding long-term follow-up and separation of the independent variables warrant further investigation. (Author/JLL)

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PERSONALIZED INSTRUCTION, GROUP PROCESS AND THE TEACHING OF PSYCHOLOGICAL THEORIES OF LEARNING.*

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While the behaviorists, particularly the adherents of Keller's personalized system of instruction (PSI), have produced impressive efficacy studies regarding the superiority of their method of traditional didactic approaches, Ryan's[3] review of the field is guarded and suggests that the expectation of wide scale applications in American universities is premature. However, faced with the degree of success attained to date regarding better retention by students of course content,[2] it would seem that a PSI class exposed to interventions in group communicational processes might result in conditions which further optimize the possibility of high performance (retention of subject matter) as well as high satisfaction (student evaluations of the course and instructor).

The setting in which the present study was carried out underscored the need for innovations in the teaching of introductory learning theory, a course which was becoming increasingly difficult to "sell" to consumer oriented students with no taste for systematic scientific research critique and methodology. While the reasons for this rejection of a hard-nosed course were probably related to idiosyncratic characteristics of the students and faculty as well as relatively unpopular large psychology class sizes in an otherwise small college, the present study focused upon altering the appeal and effectiveness of the course and made no attempt to sort out the predisposing factors which contributed to the problem.

The rationale for the redesign of the course retained the basic aim of providing an historic survey of the development of contemporary theories of learning and motivation. The modified PSI was designed to improve content learning of the course. Group process interventions addressed the need for changing peer and student-teacher communications. It was thought that the large lecture-oriented class did not provide sufficient or immediate feedback of student concerns which would have enabled the instructor to correct deficiencies or change pace. Subdividing the class into small groups with teacher assistants serving as group leaders provided a source of instructor-student go-between.

METHOD

Sample: The subjects were 51 undergraduate women psychology students attending a small suburban private college. They were enrolled separately in two consecutive required learning theory courses. Selection of either course was not based upon choice of method of instruction, but rather upon individual programming needs. The same instructor taught both courses and maintained the same texts and curriculum requirements.

Design: The control class consisted of 32 students and was held the first (Fall) semester. The teaching method was mostly didactic, teacher-centered lectures. Classes were held three times weekly for 50 minute periods. The experimental or Teacher Assistant Program class (TAP) consisted of 19 students and was

held the following (Spring) semester. Volunteer students from the control class interested in extra credit were given roles as teacher assistants (TAs) for the TAP class. The criteria for selection of TAs was having passed the course and having time available. Each of six TAs was randomly assigned to lead a group of three to four students. The TAP class met three times per week as did the control class. The TAP differed from the control in that the TAs met with their assigned small groups for one of the three class meetings each week and reviewed the lectures delivered by the professor on the preceding two classes. The TAs also met weekly with the professor for the purpose of alternate-form test construction, grading procedures, group process reports and sharing of new ideas.

Dependent measures: Eight short quizzes which contained five short-answer questions (5 points) and an essay question (5 points) partially served the purpose of final grade evaluation for both classes. In the control class, students were permitted to consult their notes and text while taking the quizzes in class. The TAP class took home most all quizzes and returned them within a week for grading by the TAs. Three written papers designed to measure critical thinking were required of both classes as well. They were graded by the professor. All students evaluated satisfaction with the instructor and course shortly before the end of the semester. The standard college form consisted of 9 items relating to the instructor and 10 items relating to the course was rated from 1 (poor) to 5 (excellent) for each item.

RESULTS

Comparison of the mean quiz scores are presented in Figure 1. The TAP class consistently scored higher in all comparisons except for quizzes 1 and 2. The scores of the control class peaked at quiz No. 2 and decreased consistently except for quiz No. 7. In contrast, the TAP class maintained higher scores than the control, with the TAP showing much less variation among all quizzes.

Insert Figure 1 about here

A comparison of the three required papers for the control and TAP showed no significant differences even in one case when the topic was identical for both classes. Comparison of the distribution of final grades for the two classes showed the following: 37% of the control received grades of B+ to A+ compared to 50% of the TAP. No one in the TAP received a grade below C, while 6% of the control class did. There were two dropouts from the TAP and none from the control.

The student evaluations of the instructor (Figure 2) showed that item No. 1: "The instructor projects spirit and interest in his own discipline" was rated significantly more characteristic of the control than TAP ($t = 2.46$; $df = 41$; $p < .02$). Only one further item (No. 7): "Instructor is available for consultation outside of class" approached significance ($t = 1.69$; $df = 41$; $p < .10$).

Insert Figure 2 about here

The student evaluations of the course (Figure 3) showed two significantly discriminating items which were again more characteristic of the control than TAP: "Instructor is willing to discuss various points of view' ($t = 2.27$; $df = 41$; $p < .05$) and "Instructor's presentation activates student's interest and attention' ($t = 3.24$; $df = 41$; $p < .01$). These were items No. 8 and 9 respectively. A third item (No. 4) approached significance: "Discussions are well planned and presented" ($t = 1.97$; $df = 41$; $p < .10$).

Insert Figure 3 about here

DISCUSSION

The most salient predicted finding of this study was the significant improvement of quiz scores. While the control group appeared to demonstrate an extinction effect with regard to a consistent decline in quiz scores after the first quarter of the semester (declining motivation?), the TAP class continued to maintain superior performance throughout. Although it may be argued that the extended length of time to complete the quizzes allotted the TAP may have contributed to the above finding, several considerations would indicate otherwise. Both the in-class testing of the control and the take-home testing of the TAP permitted the use of any notes or resource material the students chose. Additionally, quiz No. 7 was taken home by both classes

and still resulted in higher scores for the TAP class.

The absence of a significant effect in relation to required papers may reflect the fact that the instructor scored both sets with the criteria related to ability to demonstrate critical thinking. Neither the control nor the TAP classes received special instruction in shaping this ability.

Overall, the student evaluation of the instructor consistently resulted in lower satisfaction with the instructor for the TAP class, contrary to prediction. Given the TAP structure which required the instructor to relate to the class in a formal, didactic manner which limited discussion as well as removed the instructor from one of the three weekly class meetings, it is not inconceivable that a direct student-teacher rapport was curtailed in the TAP in contrast to the control. The TAP instructor also diverted his attention to the supervision of the TAs, rather than individual student conferences from the class itself. Therefore, students were less satisfied with the "instructor" input.

The student evaluation of the course may also have reflected this dissatisfaction. Ambiguity in the items included in the college's standard form may have accounted for the differences related again to the instructor's own availability to the engage the students in dialogue. This finding is upheld by Arp & Semb[1] reporting that when proctors are used to free the instructor for more student contact, the student evaluations were found to improve in comparison to a class without the proctors.

Consistent with former findings,[3] the final grades for the TAP were influenced by a higher rate of withdrawals in the TAP class. Nonetheless, the TAP students remaining obtained a higher proportion of superior grades than the controls, thus lending further support to the efficacy of the PSI method regarding academic performance.

In conclusion, while academic advantages of the TAP system are evident, the positive contribution of the attention to group process was not as apparent and probably introduced new problems. One such problem relates to the danger of curtailing the instructor's time and attention to the students for the benifit of the TAs. On the other hand, the positive aspects of this group structure must be considered with regard to opportunity for the TAs to try on teacher roles and communications passed from students to TAs to instructor which ordinarily might not have been raised by a shy student directly with the instructor. Unfortunately, the study as designed did not enable a comparison of the relative contributions of the PSI methods and the group process interventions. Further studies should also explore the long term retention of course material as well investigate the stability of the course and instructor satisfaction when the students and TAs are greater removed in time from the experience.

References

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2. McMichael, J.S. & Corey, J. R. Contingency management in an introductory psychology course produces better learning. J. Appl. Beh. Analy., 1969, 2, 79-83.

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Figure 1

Mean quiz scores for Control and TAP classes.

*p = .05

**p = .01

***p = .001

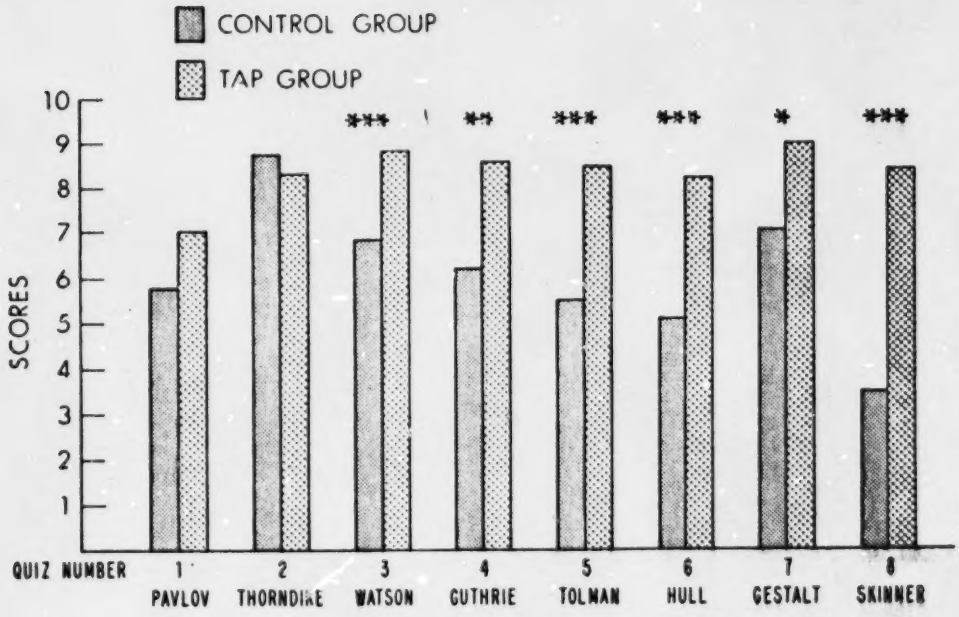

CONTROL GROUP
TAP GROUP
SCORES
10
9
8
7
6
5
4
3
2
1
***
**
***
***
*
***
QUIZ NUMBER
1
PAVLOV
2
THORNDIKE
3
WATSON
4
GUTHRIE
5
TOLMAN
6
HULL
7
GESTALT
8
SKINNER

Figure 2

Students' instructor evaluations.

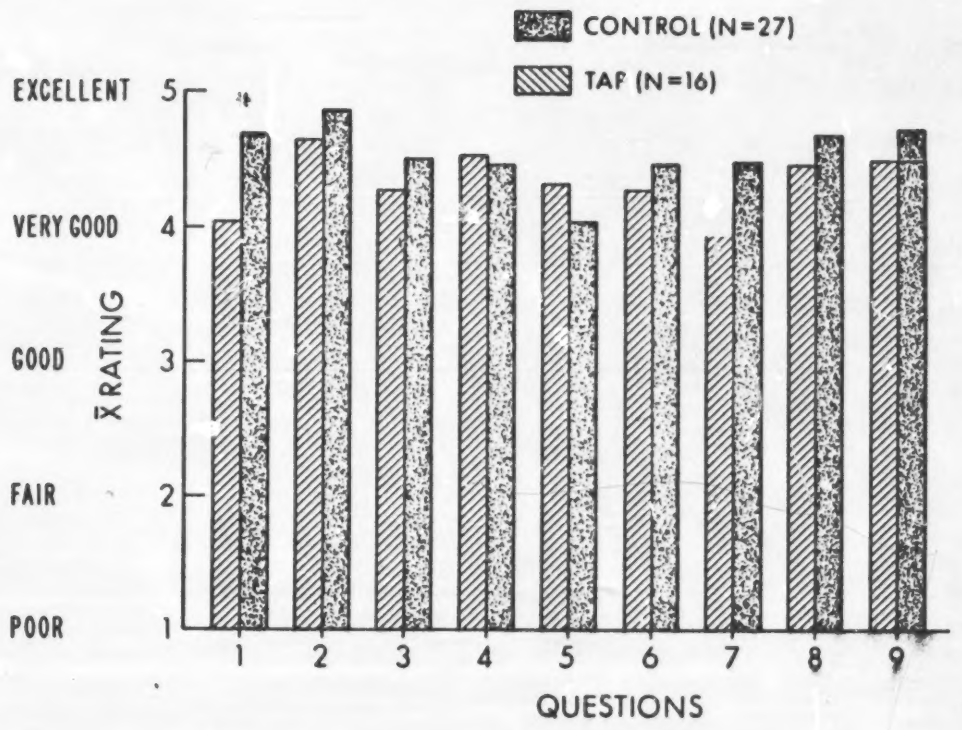
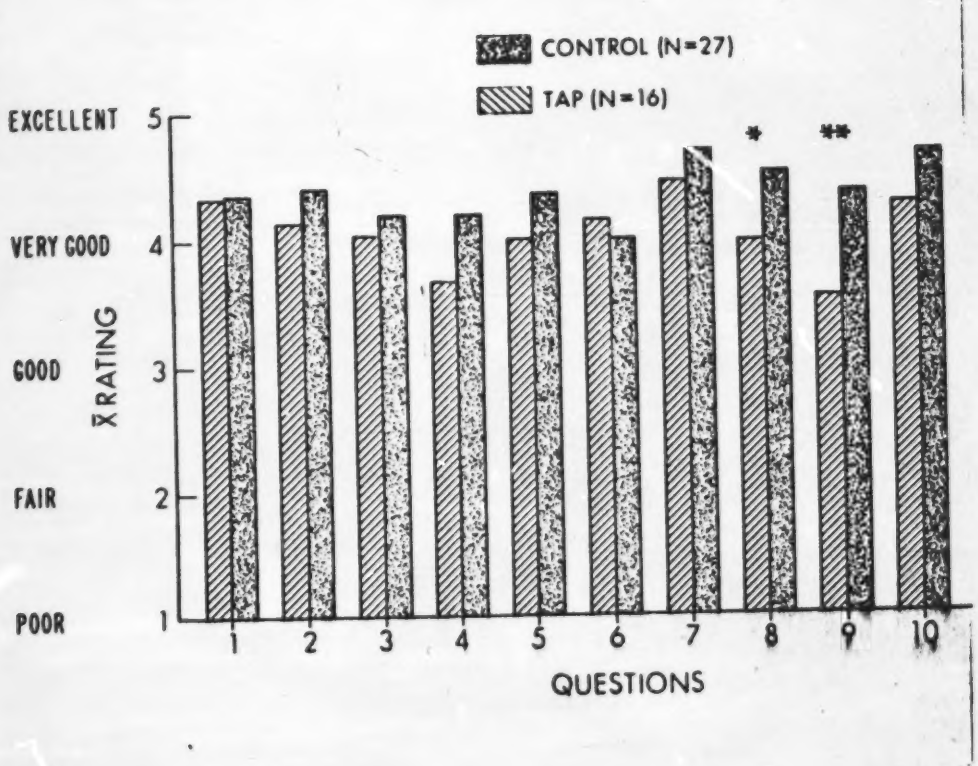

CONTROL (N=27)
TAF (N=16)
EXCELLENT
VERY GOOD
GOOD
FAIR
POOR
5
4
3
2
1
X̄ RATING
1
2
3
4
5
6
7
8
9
QUESTIONS

Figure 3

Students' course evaluations.


CONTROL (N=27)
TAP (N=16)
EXCELLENT
VERY GOOD
GOOD
FAIR
POOR
5
4
3
2
1
X̄ RATING
*
**
1
2
3
4
5
6
7
8
9
10
QUESTIONS